Roland Willa

Curriculum Vitæ

Argonne National Laboratory
Materials Science Division
9700 South Cass Avenue
Argonne, IL 60439 (USA)
work: +1 (630) 252 5058
mobile: +1 (630) 903 5416
rwilla@anl.gov

About me

Born on August 28, 1986 in Sion (Valais), Swiss citizen, married, three children

Professional Experience

since 2016 **Postdoctoral fellow**, *Materials Science Division*, Argonne National Laboratory.
2016 **Postdoctoral appointee**, *Institute for Theoretical Physics*, ETH Zurich.
2010–2016 **Research associate**, *Institute for Theoretical Physics*, ETH Zurich.
2008–2016 **Teaching assistant**, *D-PHYS & D-MATH*, ETH Zurich.
2015–2016 Referee for Journal of Applied Physics, Physical Review B, Advanced Materials
2014 Session Chair for QSIT Lunch Seminar
2011–2015 Representative in the department's board and conference

Education

05/2010 – 02/2016 **Doctorate in theoretical physics**, *Institute for Theoretical Physics*, ETH Zurich.
On type-II superconductors: Geometric barrier and bulk vortex pinning
Supervisor: Prof. Dr. Gianni Blatter, PD Dr. Vadim B. Geshkenbein

10/2009 – 10/2010 **Master of Science ETH in physics**, ETH Zurich.
Geometric barriers in superconductors with complex shape
Diploma with distinction, *summa cum laude*, average mark 6.0 (of 6.0)

10/2005 – 09/2009 **Bachelor of Science ETH in physics**, ETH Zurich.
Diploma with distinction, average mark 5.8 (of 6.0)

08/2000 – 06/2005 **High school (Matura)**, *Lycée-Collège cantonal des Creusets*, Sion (VS).
Specific option: physics and applied mathematics; Diploma with distinction

Awards and Honors

08/2016 Postdoc.Mobility fellowship from the Swiss National Science Foundation
05/2011 Willi-Studer Prize 2011 for the best diploma MSc in physics ETH Zurich

Language proficiency and IT skills

- German and French as mother tongues, English with professional proficiency
- excellent knowledge of various programming languages,
- advanced expertise in numerical simulations, data analysis, diff. equation solver,
- familiarity with all common operating systems and office suites.

Conferences, Workshops & Schools

07/2016 **MaNEP Swiss Workshop**, Les Diablerets (Switzerland),
Quantum Materials and Electronic Devices

03/2016 **APS March Meeting**, Baltimore (USA),
Annual Meeting of the American Physical Society

08/2015 **M^{2}S - HTSC**, Geneva (Switzerland),
11th International Conference on Materials & Mechanisms of Superconductivity

05/2015 **Vortex2015**, El Escorial (Spain),
International Workshop on Vortex Physics

05/2014 **ICSM**, Antalya (Turkey),
International Conference on Superconductivity and Magnetism

08/2013 **STEP** Summerschool, Cargèse (Corsica),
Superconductivity - Theory, Experiments, and Phenomena

05/2013 **Gordon Research Seminar & Conference**, Les Diablerets (Switzerland),
Seminar and Conference on Superconductivity

01/2013 **5. MaNEP Winterschool**, Saas-Fee (Switzerland),
Understanding Electronic and Magnetic Correlations

06/2012 **MaNEP Meeting**, Zurich (Switzerland),
Annual Meeting of NCCR MaNEP

06/2012 **SPS Meeting** 2012, Zurich (Switzerland),
Annual Meeting of the Swiss Physical Society

09/2011 **Swiss Japan Workshop**, Zurich (Switzerland),
New Electronic Properties through Structure and Correlation

06/2011 **MaNEP Workshop**, Les Diablerets (Switzerland),
Basic research and applications

01/2011 **4. MaNEP Winterschool**, Saas-Fee (Switzerland),
Emergent States of Electronic Matter

Publications

[4] *Probing the pinning landscape in type-II superconductors via Campbell penetration depth*
R. Willa, V. B. Geshkenbein, G. Blatter, Phys. Rev. B **93**, 064515 (2016).

[3] *Campbell response in type II superconductors under strong pinning conditions*
R. Willa, V. B. Geshkenbein, R. Prozorov, G. Blatter, Phys. Rev. Lett. **115**, 207001 (2015).

[2] *Campbell penetration in the critical state of type-II superconductors*
R. Willa, V. B. Geshkenbein, G. Blatter, Phys. Rev. B **92**, 134501 (2015).

[1] *Suppression of geometric barrier in type-II superconducting strips*
R. Willa, V. B. Geshkenbein, G. Blatter, Phys. Rev. B **89**, 104514 (2014).

Talks

- *Microscopic origin of the Campbell length*
  Contributed talk: MaNEP Swiss Workshop, Les Diablerets (Switzerland), July 2016.
- *Vortex creep and thermal depinning within strong pinning theory*
  Contributed talk: APS March Meeting, Baltimore (USA), March 2016.
- *Characterization of vortex pinning through the Campbell length*
  Contributed talk: APS March Meeting, Baltimore (USA), March 2016.
- *Strong vortex pinning: critical current, Campbell length and thermal creep*
  Seminar: Argonne National Laboratory, Argonne (USA), March 2016.
- *Characterizing vortex pinning in the presence of strong defects*
  Seminar: Ames Laboratory / Iowa State University, Ames (USA), March 2016.
- *The Campbell length in the presence of strong vortex pinning*
  Invited talk: Vortex2015, El Escorial (Spain), May 2015.
- *Suppression of Geometric Barrier*
  Contributed talk: ICSM, Antalya (Turkey), May 2014.
- *Controlled flux penetration in platelet superconductors*
  Contributed talk: SPS Meeting, Zurich (Switzerland), June 2012.

Posters

- *Characterization of vortex pinning with the Campbell penetration length*
  M^2S, Geneva (Switzerland), August 2015.
- *The Campbell length in the presence of strong vortex pinning*
  Vortex2015, El Escorial (Spain), May 2015.
- *Suppression of geometrical barrier in platelet superconductors*
  STEP, Cargèse (France), August 2013.
- *Controlled flux penetration in platelet superconductors*
  Superconductivity GRC & GRS, Les Diablerets (Switzerland), May 2013.
- *Suppression of geometric barrier for vortices in superconducting strips*
  Swiss Japan Workshop, Zurich (Switzerland), September 2011.
- *Suppression of geometric barrier*
  MaNEP Workshop, Les Diablerets (Switzerland), June 2011.